**BACKGROUND AND OBJECTIVES**

Periodontitis is an inflammatory disease caused by periodontopathic bacteria in the dental biofilm leading to destruction of the tooth surrounding tissues. Subgingival plaque sampling is a common way for the determination of periodontopathic bacteria in patients suffering from periodontal disease, but the diagnostic potential of microbial assessment for periodontitis has been under discussion. Subgingival plaque is often collected by paper point sampling and assessed by polymerase chain reaction (PCR), Real-Time PCR or checkerboard DNA-DNA hybridization. Semi-quantitative determination by PCR was shown to be suitable to distinguish between healthy and periodontitis subjects (Haftajee et al., 2009). Detecting periodontopathic bacteria in saliva would be a more comfortable way to identify individuals susceptible to periodontal disease than the time-consuming and delicate paper point sampling (Saygun et al., 2011).

The aim of the present study was to investigate if the results of microbial assessment in stimulated whole saliva is comparable to the determination of bacteria collected in the periodontal pocket.

**MATERIALS AND METHODS**

23 periodontitis patients (8 females, 15 males; mean age ± SD: 37.78 ± 7.79 years) participated in saliva and subgingival plaque sampling before conservative periodontal therapy. Saliva was collected using the Saliva Collection System® (SCS, Greiner Bio-One) after an overnight fast between 8.00 and 10.00 am. Patients were not allowed to brush their teeth or smoke on the day of saliva sampling. Subgingival plaque samples were collected with sterile paper points from the 4 deepest pockets, inserted for 15 seconds. 79 bacterial species from the periodontal pocket were analyzed by checkerboard DNA-DNA hybridization (University of Bern), 20 bacterial species in the periodontal pocket sample and in whole saliva were determined by PCR (ParaCheck®, Lambda) using GenElute™ Mammalian Genomic DNA Miniprep Kit (Sigma Aldrich®, USA) for DNA extraction.

**RESULTS**

Regression analysis of the results of PCR showed that 6 bacterial species had significant correlations between saliva and subgingival plaque samples (Table 1). Namely, Aggregatibacter actinomycetemcomitans, Tannerella forsythia, Treponema denticola, Fusobacterium nucleatum, Peptostreptococcus micros and Campylobacter gracilis had the highest rank correlations (0.467-0.694). The presence of periodontal pathogens was detected to a higher amount in saliva compared to subgingival plaque samples (Figure 2). F. nucleatum, A. odontolyticus, S. constellatus, S. mitis and V. parvula were detected in 23/23 patients in whole saliva.

**CONCLUSION**

Detecting some species of periodontopathic bacteria by collecting saliva from periodontitis patients is identical or even more sensitive than by sampling in the periodontal pocket (Umeda et al., 1998). This may simplify microbial assessment in periodontitis patients, however, for certain microorganisms, the combination of different sampling methods should be preferred. Salivary diagnostic may be a potential way for the early screening of periodontitis patients by combining the detection of bacteria and specific periodontal disease markers. It may also have an implication for evaluating the transmission of periodontopathic bacteria through saliva (Slots et al., 2011).

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